

# Meeting minutes

The meeting starts at 14:30 and ends at 17:05 of Wednesday 19 June 2024. Location: Meeting Room DIAT12, 3rd floor, Politecnico di Torino, C.so Duca degli Abruzzi 24, Turin.

## Participants

Alberto Viglione (PoliTo)  
Luca Lombardo  
Anna Basso  
Paola Mazzoglio (online)  
Enrico Arnone (UniTo)  
Olivia Ferguglia  
Sara Rubinetti  
Nicola Cortesi  
Giovanni Saglietto  
Elisa Palazzi (online)  
Susanna Corti (CNR-Bo - online)  
Ignazio Giuntoli (online)  
Ilaria Tessari (online)

## Agenda

- 1) Round of introduction; (5 min)
- 2) Model development: presentation of Luca and Anna on the hydrological model setup and calibration; (20 min)
- 3) Definition of weather regimes for the GAR: presentation (or discussion) by Ilaria, Ignazio and/or Susanna; (20 min)
- 4) Sensitivity of climate indexes of extremes to model spatial resolution: presentation (or discussion) by Enrico and/or Olivia; (20 min)
- 5) Possibilities for joint analyses, even before the model chain has been used (e.g., using daily discharges in Austria or more); (40 min)
- 6) AOB. (N min)

## Notes

- Point 2: PoliTo is proceeding with the calibration of the rainfall-runoff model, using the UERRA input dataset. The retrieval of daily discharges is still ongoing but in a good state. The next steps are the regional calibration and validation, and the identification of flood events based on simulated river discharges.
- Point 3: CNR-ISAC proposes to use 7 euro-atlantic weather regimes to identify connection with floods in the GAR region. The 7 regimes are better representing seasonality than the 4 originally proposed by Ignazio. They have used ERA5 data. The questions are: to what extent can we

connect precipitation extremes to large-scale regimes? And to what extent can we connect floods to large-scale regimes? The preliminary analysis made with Austrian data and the 4 original regimes could be repeated for the 7 regimes, to answer this second question.

- Point 4: UniTo is doing a similar analysis as CNR-ISAC, based on ERA5 and climate model simulations but focusing on Piemonte (Giovanni). They are using detrended series to identify weather pattern (which led to a discussion with CNR-ISAC). They find out that ERA5 is coherent with the temporal changes of climate models in terms of weather pattern frequency. The analysis of the connection of weather regimes and extreme precipitation and floods could be better for Piemonte than for eastern alpine regions because Piemonte is more influenced by the Atlantic weather conditions.

UniTo is also looking at differences between UERRA/CERRA vs ERA5/ERA5land in terms of the resolution achievable (Nicola) and the orographic effect on temporal trends of the ETCCDI indices (Olivia), also stratifying by north/south/east/west GAR, and by season. ERA5 seems also in this respect coherent with (many) climate models, showing higher trends in high-elevated pixels, much better than EOBS, and much better than UERRA for which the trends seem stronger for low-elevated pixels than high-elevated ones. The comparison has been made with CMIP6 models with resolution < 0.6 deg for the period 1951-2020. Paola could see whether a similar tendency is visible from the ground rain gauge data series.

- Point 5: one quick collaboration is to continue the analysis on the connection between weather patterns, climatological extremes, and observed discharges in Austria and Piemonte, waiting for the simulated discharges from the rainfall-runoff model. The exchange of data, procedures, and results will be done using the dropbox space. The link is: <xxxxxxx>  
PoliTo will finish the calibration of the rainfall-runoff model with the UERRA data inputs but will then investigate whether ERA5 could be used with similar performances. ERA5 also has information about potential evapotranspiration (better than using a simple formula based on temperature and radiation only).
- Point 6:
  - In order to propose an EGU session, Alberto will have a look on the sessions of EGU2024 of HS and NH and see whether a title that is different is possible; Elisa and/or Ignazio will do the same for CL and AS.
  - Anna will share the dissemination plan table to be filled in. It will be available on the dropbox space, but editable through web-word.
  - Anna will prepare a dynamic Gantt to see where are we placed respect to the planned activities, which are delayed by the late recruitment of the research assistants.
  - The next meeting in fall could be on October 18, in Turin, hopefully in presence also with CNR-ISAC.

Alberto Viglione